Purchase of PALACE Drifters (DURIP)

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LONG-TERM GOALS

The long-term goal of this project is to better understand the properties of the upper portion of the water column in the Japan Sea. It is important to understand the seasonal cycle in the upper 1000 m or so of the Japan Sea: how the Sea stratifies in spring and summer and how it forms a mixed layer in fall and winter, sometimes with deep convection occurring.

OBJECTIVES

I want to be able to study the circulation and hydrography of the upper 1000 m of the Japan Sea over at least a few complete seasonal cycles in order to understand the process of mixed-layer formation and destruction there. In some ways the Japan Sea behaves as a subtropical ocean, and in other ways it is more like a subarctic one; as a result, it is a useful laboratory for studying many oceanographic processes that occur throughout the world ocean. I am using PALACE floats in this study, and the work discussed here fits into a larger program in the Japan Sea with about 20 PIs.

APPROACH

I deployed 36PALACE floats in the Japan Sea during 1999. These floats were deployed from the Russian research vessels *Professor Khromov* and *Gordienko* from the FERHRI laboratory in Vladivostok, from the R/V *Roger Revelle*. These floats are presently cycling between the sea surface and 800 m depth at approximately 7 day intervals and are collecting profiles of temperature and salinity during their ascent phase on each cycle. In all, about 1500 profiles per year will be collected this way. This will provide good coverage of the Japan Sea, even in the winter season. All of the results are now available in real-time via the ARGOS system and a web page. I am presently doing similar work in the N. Atlantic, and both the Atlantic and Japan Sea results can be viewed on the web at http://flux.ocean.washington.edu. An example of the trajectories of these floats is given in the figure at the end of this report. Of the 36 floats that will be deployed, about 30 will be purchased with funds from this grant (DURIP). The remainder will be purchased using funds from a separate ONR grant.

WORK COMPLETED

The floats were deployed by Russian personnel from FERHRI in the Russian (western) sector of the Japan Sea, and by US personnel in the eastern Japan Sea using the *Revelle* during Lynne Talley's CTD cruise in the summer of 1999. The floats were purchased from Webb Research Corp., and final

ballasting, assembly, and pre-deployment checkout was done at UW. Since the deployments, a web page (address above) has been completed that allows an examination of the data in near real-time.

RESULTS

Scientific analyses of the data are just beginning. So far, most of the work since deployment has gone into getting the web page up and running. Additionally, there have been some problems (in most cases correctable) with the salinities measured by the floats. This problem has been traced to contamination of the CTD sensor by a biocide, which is slowly washing off as it dissolves in seawater. About half of the instruments were originally affected by this problem, but now this number has decreased to about a third of the instruments, with the number continuing to decrease.

IMPACT/APPLICATIONS

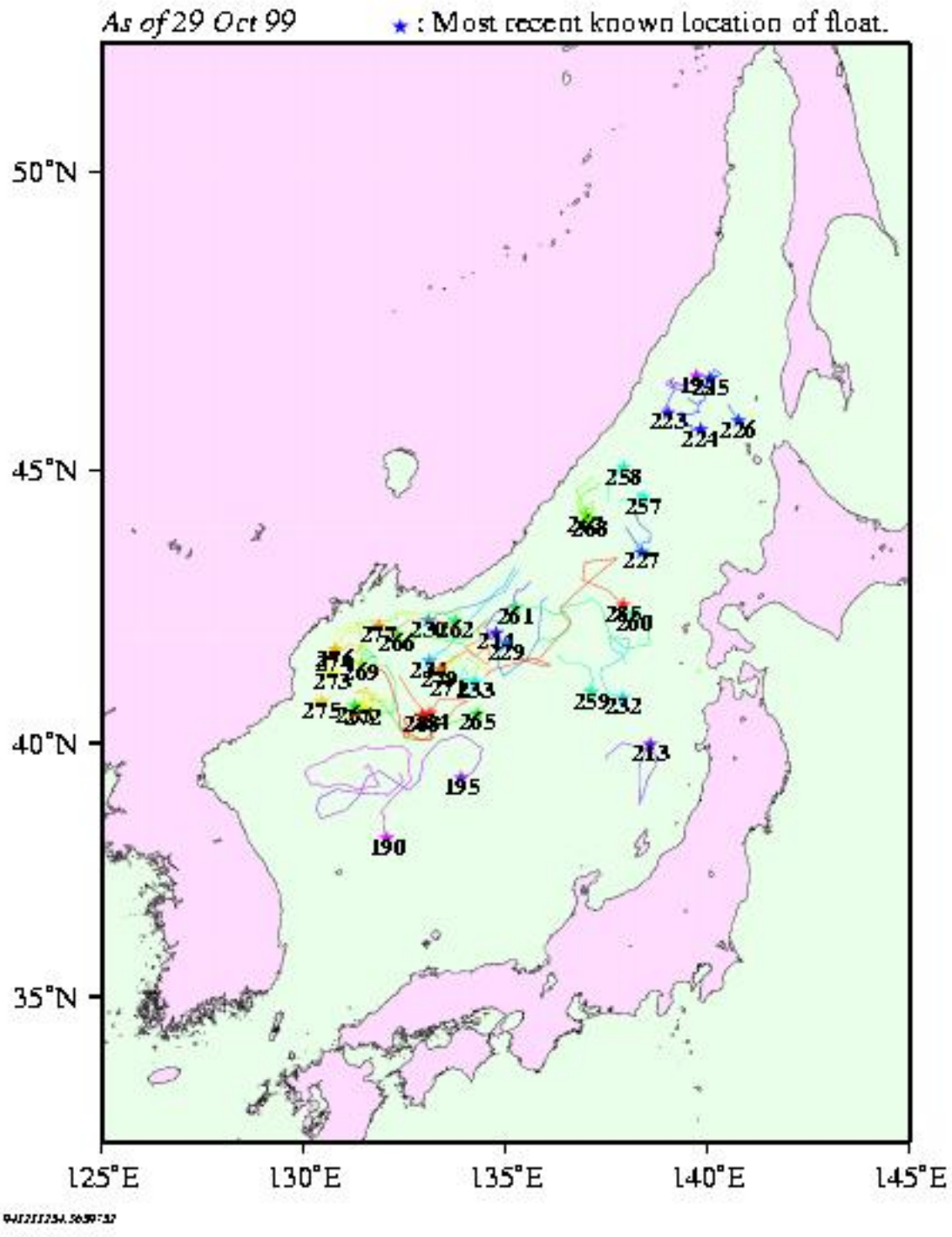
This work has just gotten underway, and it is difficult to know its impact at this early date. However, in just its first two weeks of operation, the web page that shows the real-time data has had over 600 hits, suggesting that there is a great deal of interest in this work. Soon these data will be examined in the context of the other projects in this experiment, and at that point the impact will be more obvious.

TRANSITIONS

None yet.

RELATED PROJECTS

A number of other investigators are also working on the Japan Sea project. I have worked most closely with Prof. Lynne Talley of Scripps, who was chief scientist on the main Japan Sea hydrography/tracer cruise and is also working closely with the Russians to insure that this work is successful. Also, I have a NICOP grant to support several Russian scientists who helped to get the clearance from Russian authorities to allow this work to be carried out inside the Russian EEZ in the Japan Sea.



This figure shows a composite plot of all UW PALACE floats in the Japan Sea as of 29 October 1999. Most of the floats are drifting at a depth near 800 m.